

# Section 3

# PLM Analysis

**MATERIALS ANALYTICAL SERVICES, LLC**  
**PLM ANALYSIS**

Proj#-Spl# M71614 - 001CSM Analyst Paul Hess Date 2/27/2023  
 ClientName Kazan, McClain, Satterley & Greenwood ClientSpl 1 \_\_\_\_\_  
 Location Johnson's Baby Power Bottle, 1.5 oz.  
 Type\_Mat \_\_\_\_\_  
 Gross debris on filter % of Sample 100  
 Visual \_\_\_\_\_ Temp ( $\pm 1^{\circ}\text{C}$ ) 22

**OPTICAL DATA FOR ASBESTOS IDENTIFICATION**

Morphology	wavy		
Pleochroism	none		
Refract Index	**		
$\alpha / \gamma$ (nm)	650 510		
Sign^	positive		
Extinction	parallel		
Birefringence	*		
Melt	no		
Fiber Name	Chrysotile		

**ASBESTOS MINERALS**

**EST. VOL. %**

Chrysotile..... 0.002 to 0.004  
 Amosite.....  
 Crocidolite.....  
 Tremolite/Actinolite.....  
 Anthophyllite.....

**OTHER FIBROUS COMPONENTS**

Talc-fibrous \*\*\*  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**NON FIBROUS COMPONENTS**

\_\_\_\_\_

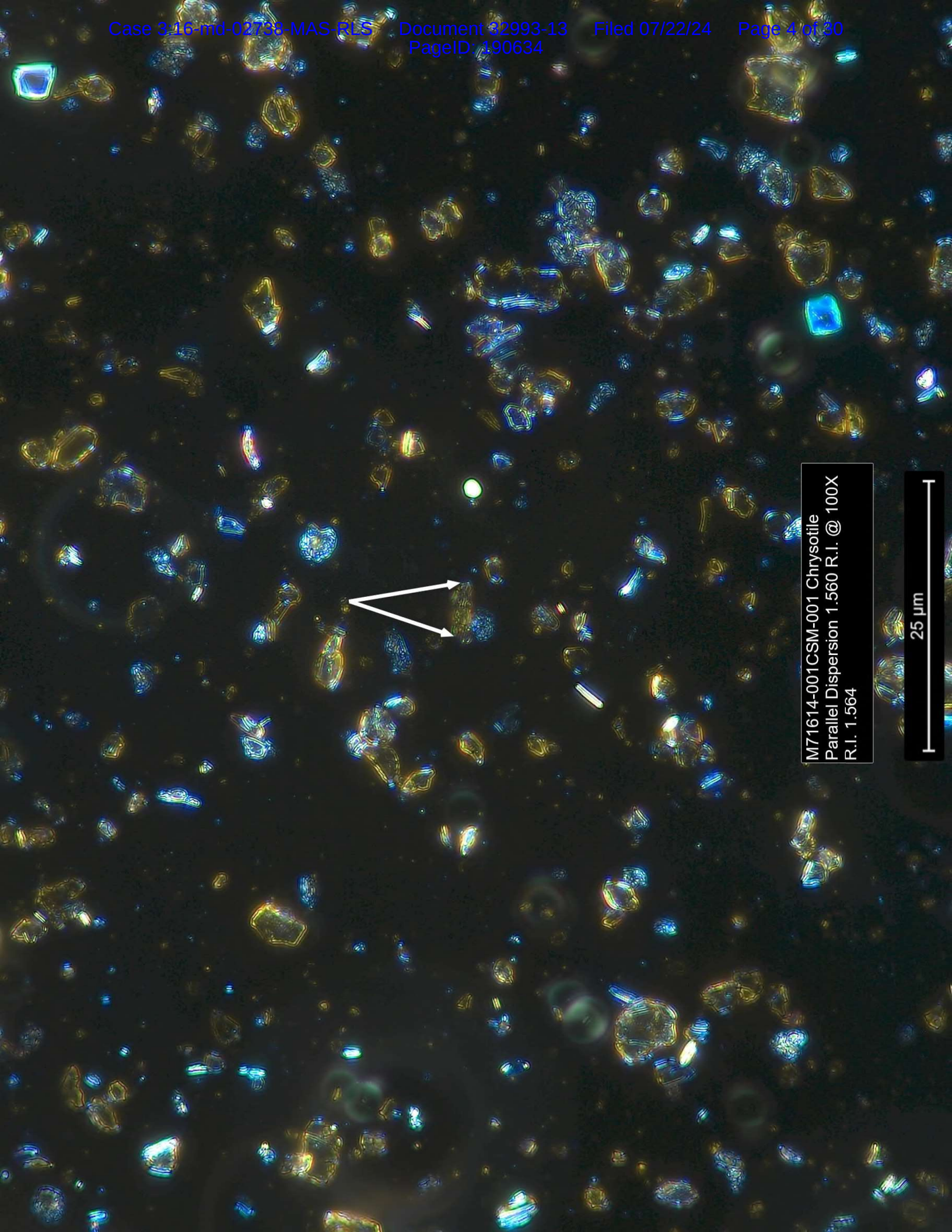
Talc	X
Particulate	X

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**Comments**

Chrysotile asbestos observed. \*\* Refractive indices parallel ranged 1.564(550nm) to 1.568(510nm). Refractive indices perpendicular range 1.557(650nm) to 1.564(550nm). \*\*\* Trace fibrous Talc observed. \*Birefringence from low to moderate. X=Materials Detected. Six Chrysotile structures, inclusive of those documented by photograph, counted in 30 fields of view. Equates to 0.3 structure per square millimeter.

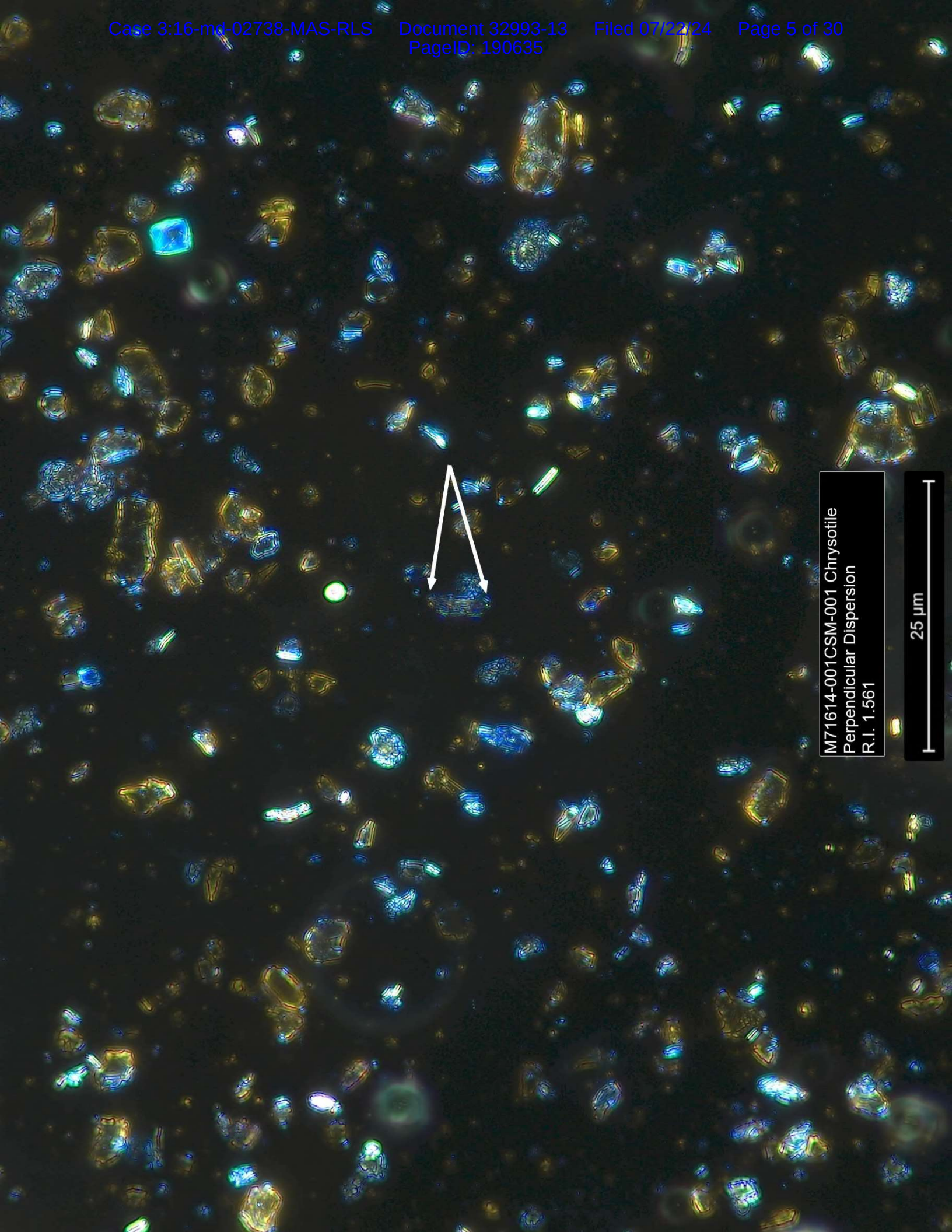




M71614-001CSM-001 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.564

25  $\mu$ m

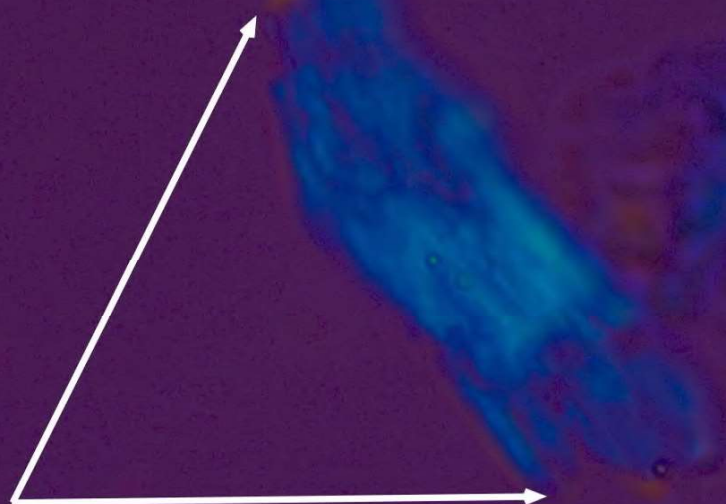




M71614-001CSM-001 Chrysotile  
Perpendicular Dispersion  
R.I. 1.561

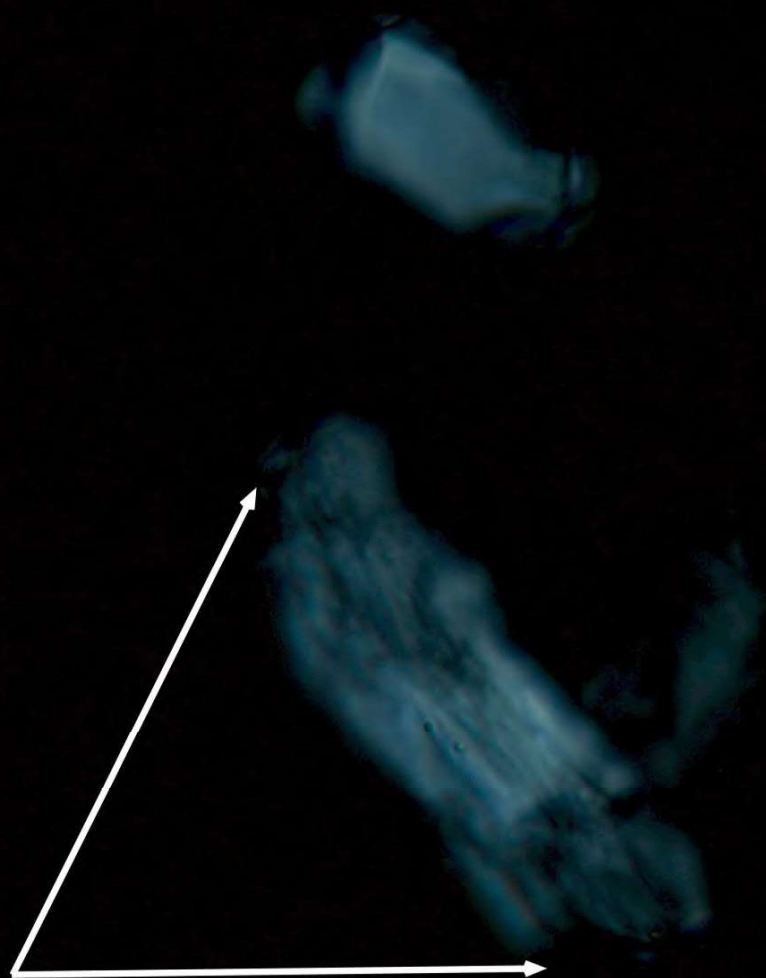
25  $\mu$ m





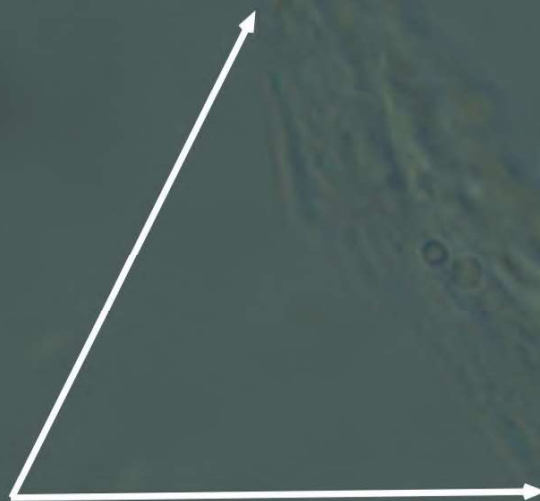
M71614-001CSM-001 Chrysothrix  
Elongation @ 630X

2.5  $\mu$ m



M71614-001CSM-001 Chrysothrix  
Crossed Polars @ 630X

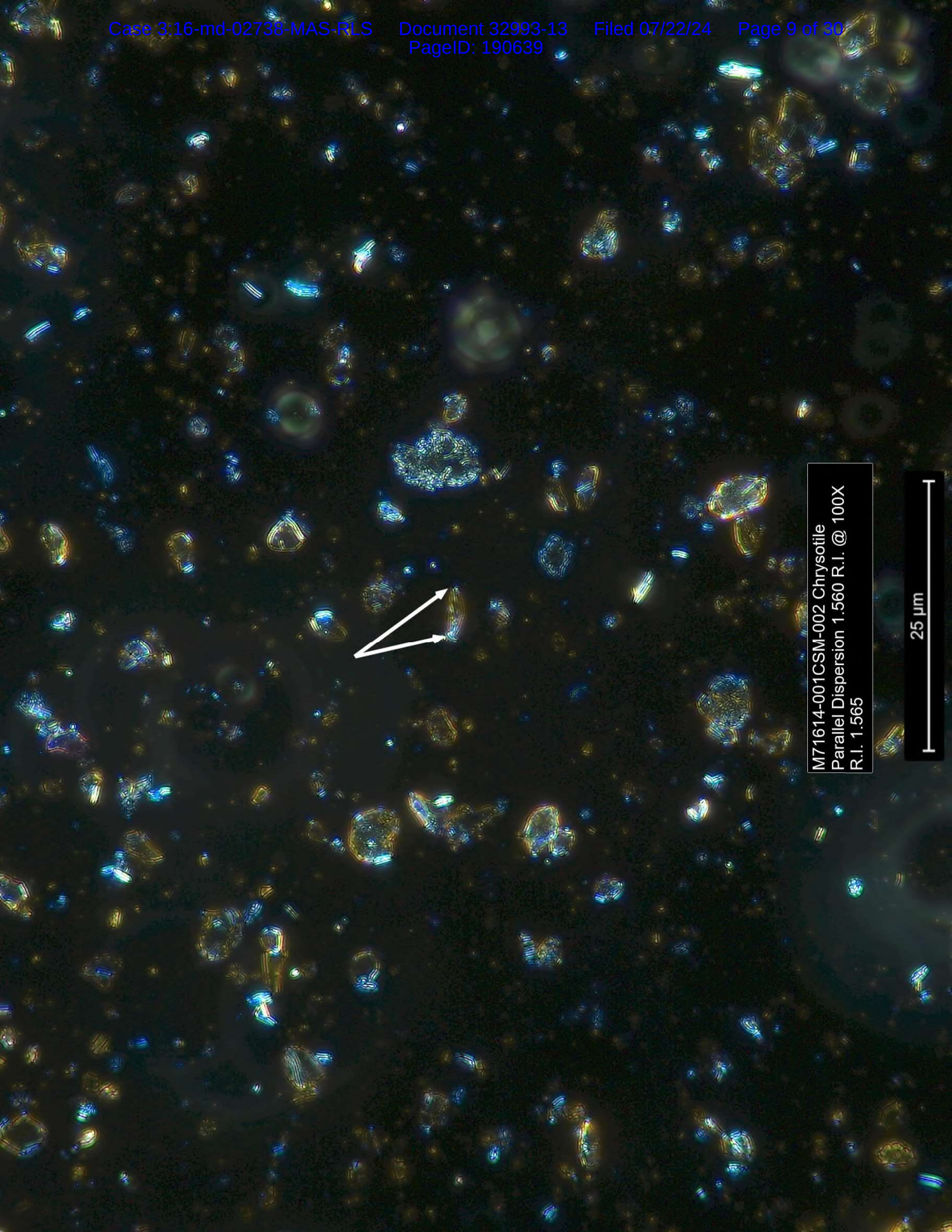
2.5  $\mu$ m



M71614-001CSM-001 Chrysothrix  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu$ m

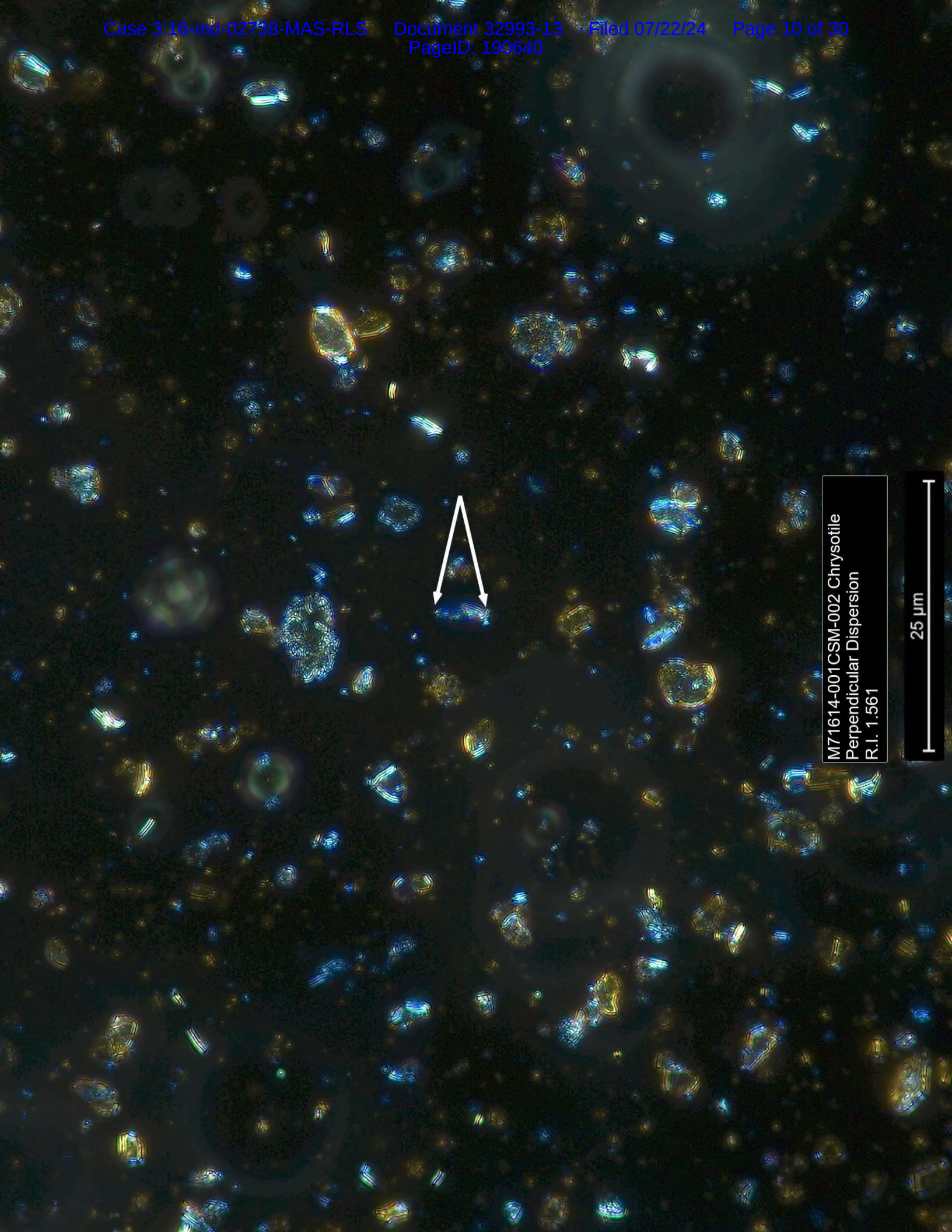




M71614-001CSM-002 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.565

25  $\mu$ m

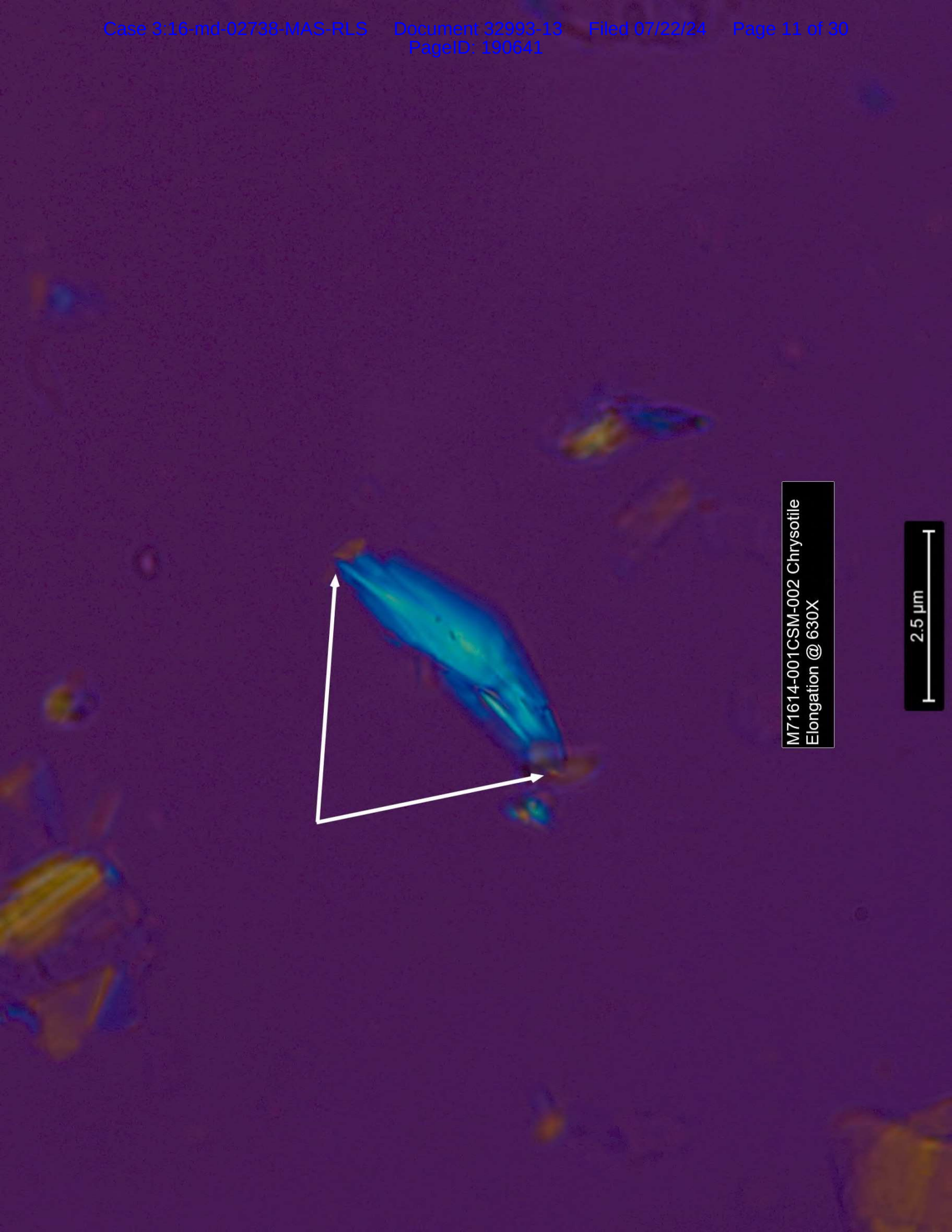




M71614-001CSM-002 Chrysotile  
Perpendicular Dispersion  
R.I. 1.561

25  $\mu$ m

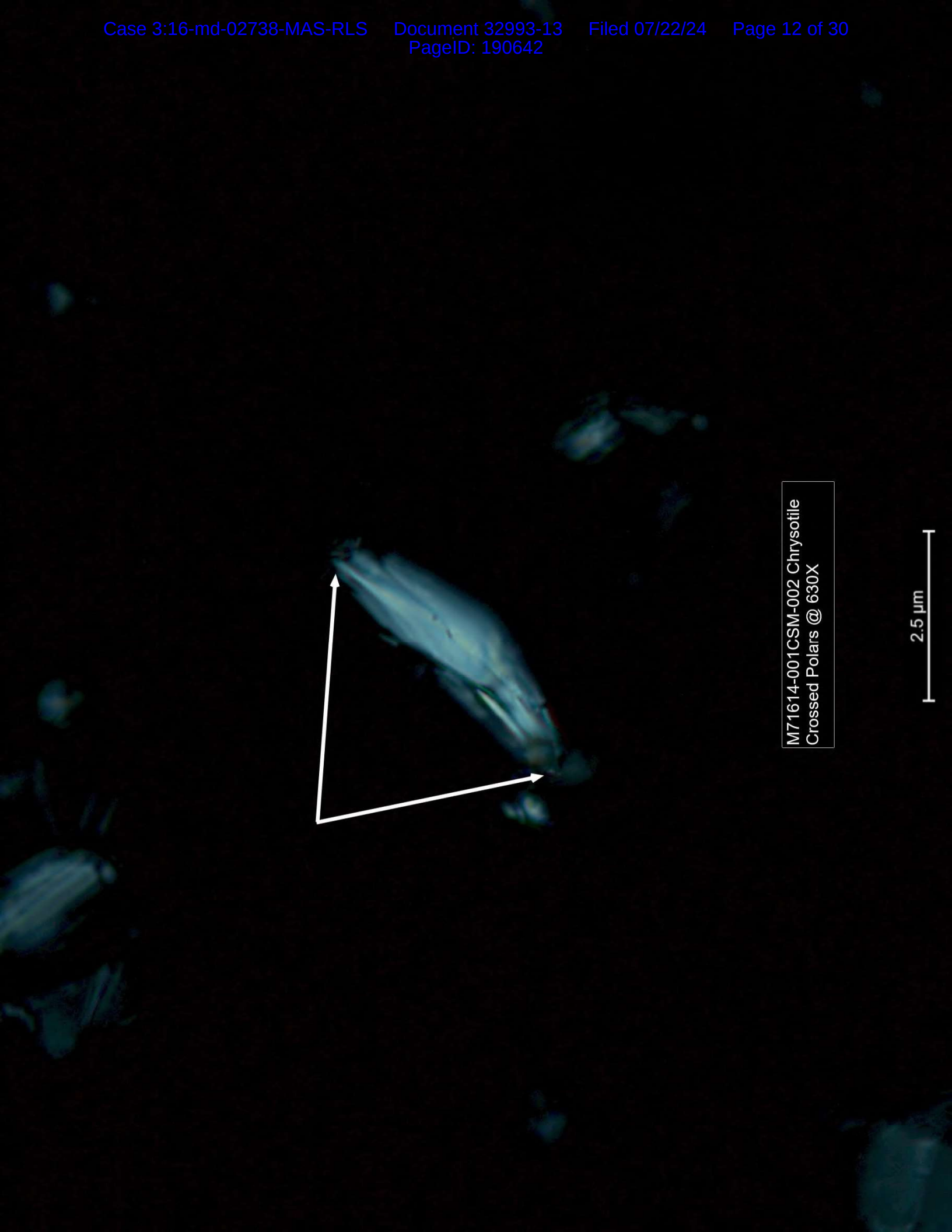




M71614-001CSM-002 Chrysotile  
Elongation @ 630X

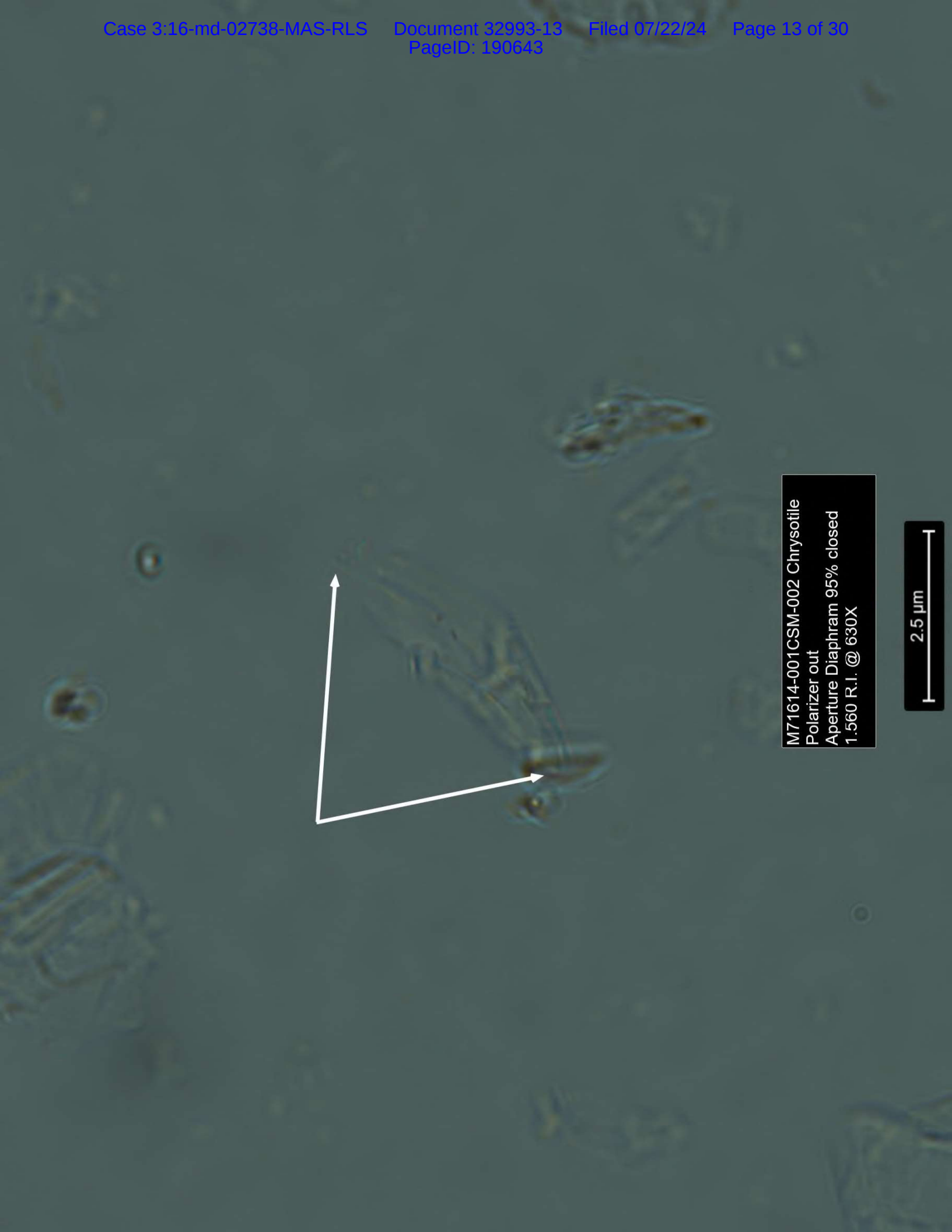
2.5  $\mu\text{m}$





M71614-001CSM-002 Chrysotile  
Crossed Polars @ 630X

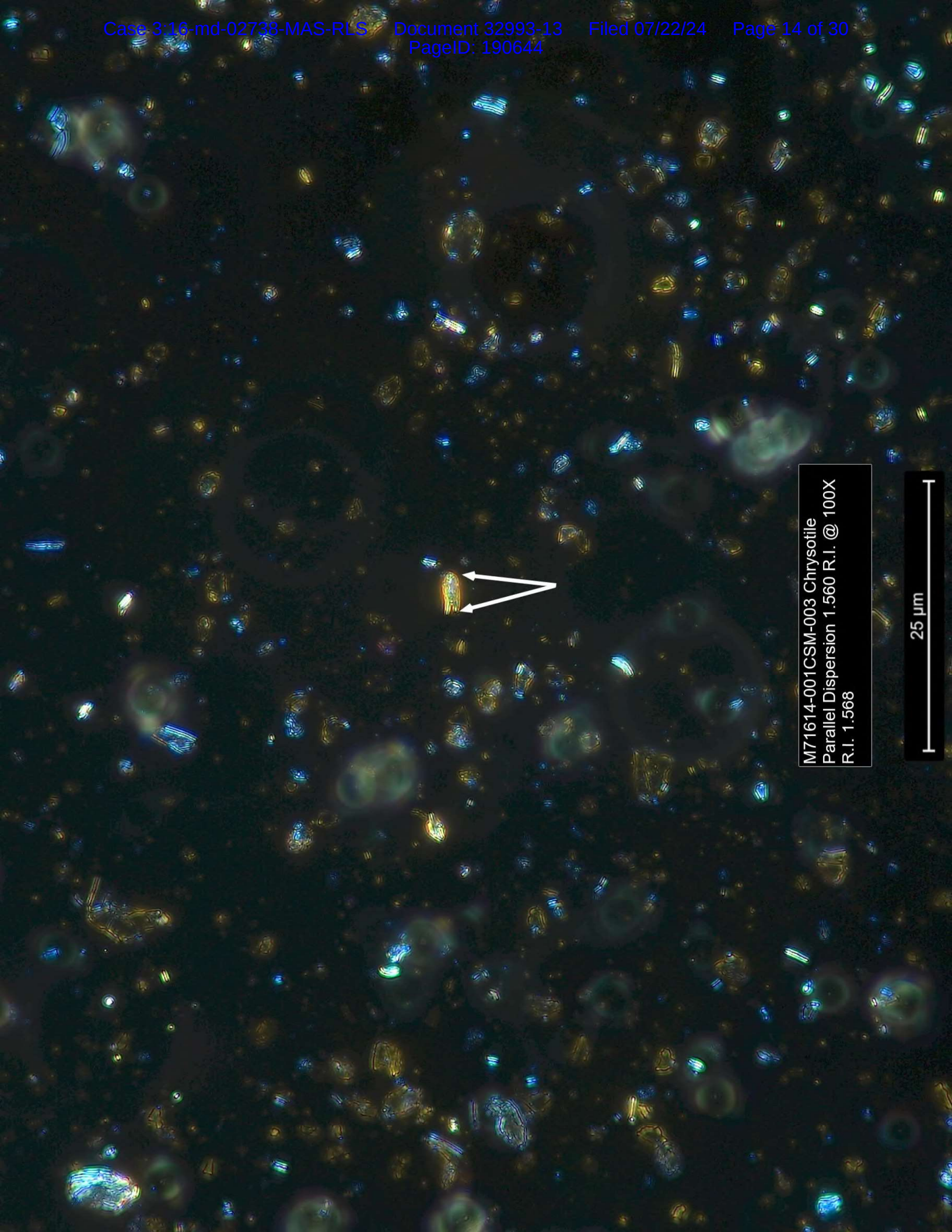
2.5  $\mu\text{m}$



A polarized light micrograph showing several elongated, needle-shaped chrysotile fibers. The fibers exhibit characteristic double-bend structures and are surrounded by a fine, web-like matrix. A white arrow points to a specific fiber structure. A scale bar in the bottom right corner indicates 2.5 micrometers.

M71614-001CSM-002 Chrysotile  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

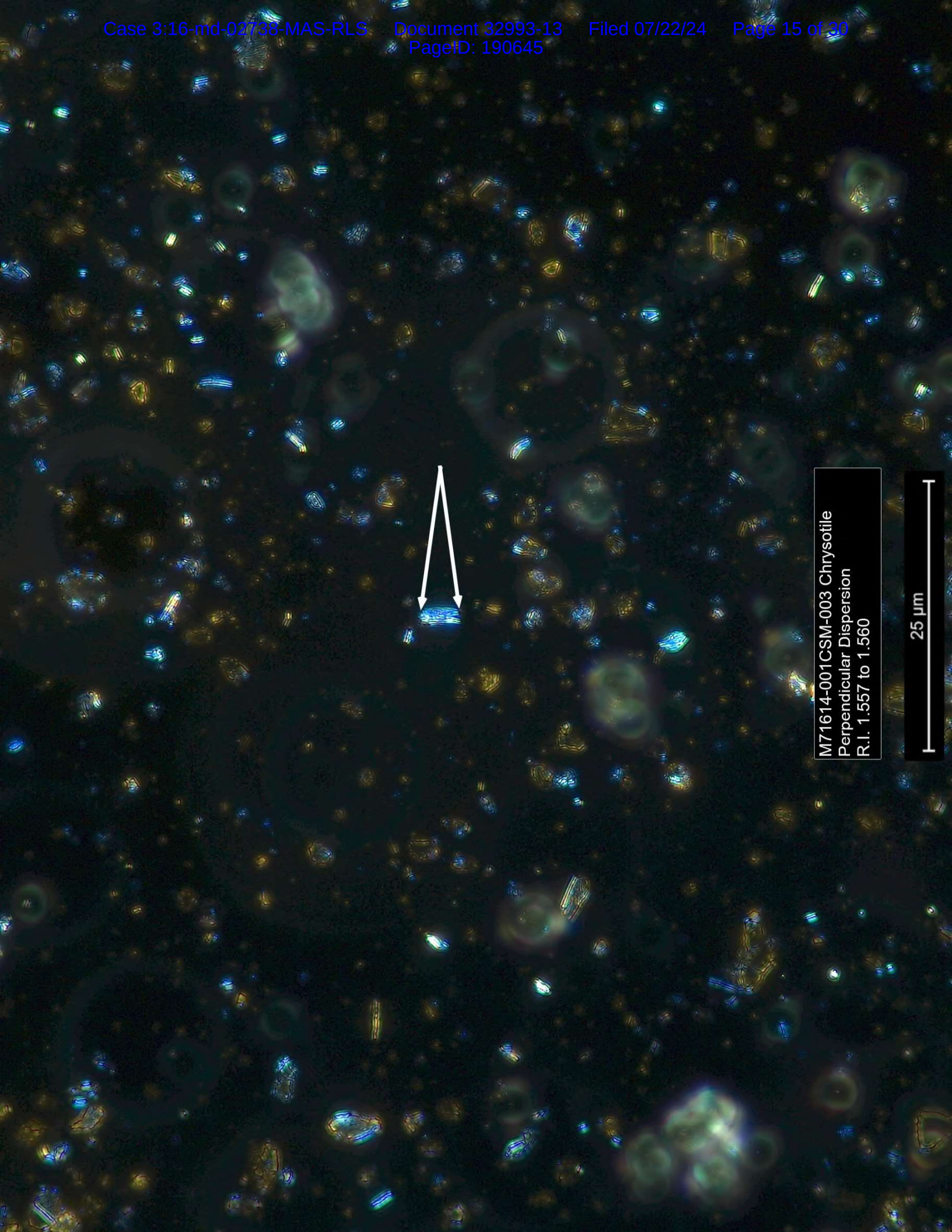
2.5  $\mu\text{m}$



M71614-001CSM-003 Chrysotile  
Parallel Dispersion 1.560 R.I. @ 100X  
R.I. 1.568

25  $\mu$ m

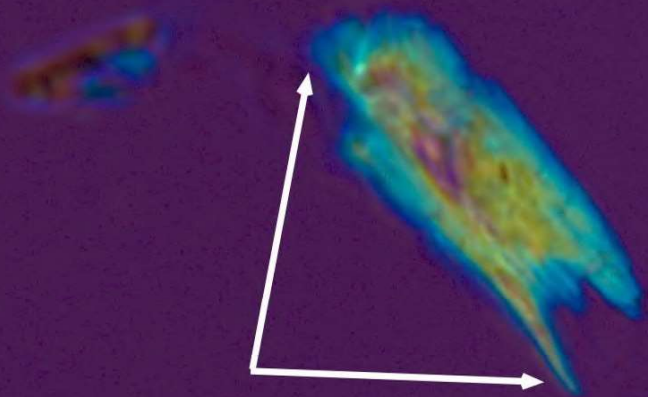




M71614-001 CSM-003 Chrysotile  
Perpendicular Dispersion  
R.I. 1.557 to 1.560

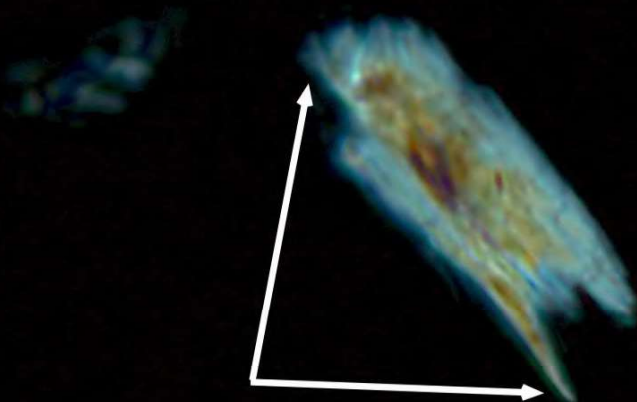
25  $\mu$ m





M71614-001CSM-003 Chrysotile  
Elongation @ 630X

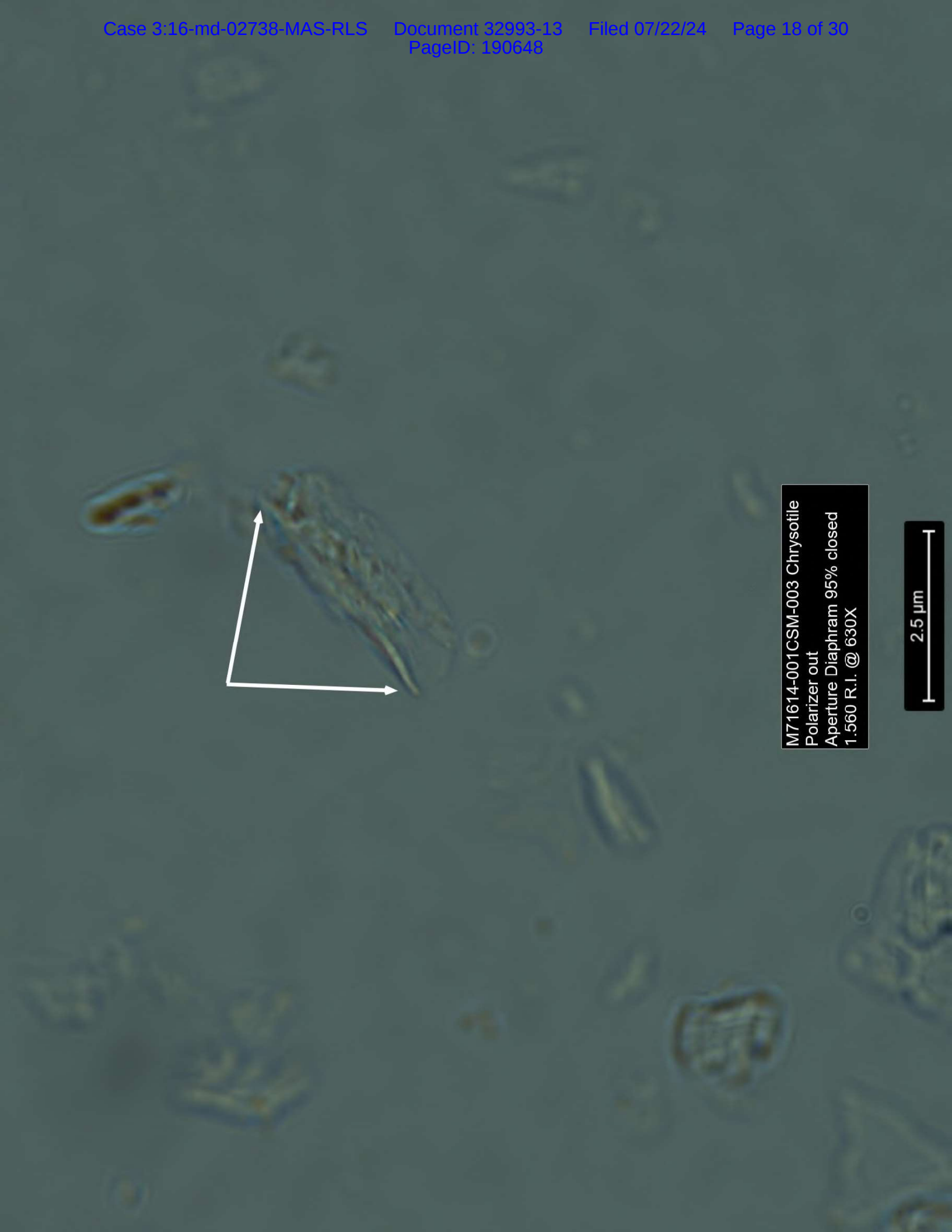
2.5  $\mu\text{m}$



M71614-001CSM-003 Chrysotile  
Crossed Polars @ 630X

2.5  $\mu\text{m}$

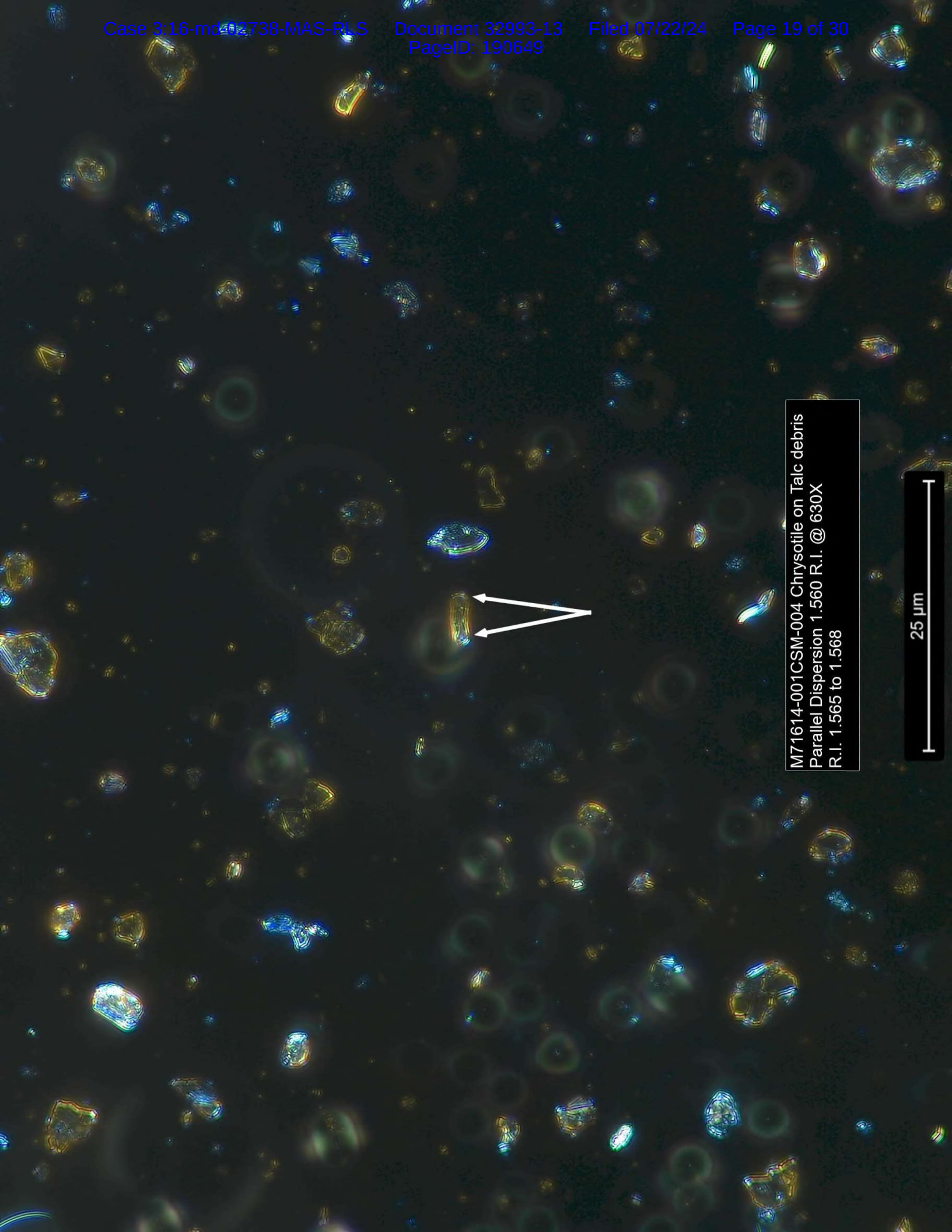




A polarized light micrograph showing numerous elongated, needle-shaped chrysotile fibers. The fibers exhibit characteristic Maltese crosses under polarized light. A white arrow points to a specific fiber in the upper left quadrant. A scale bar in the bottom right indicates 2.5 micrometers.

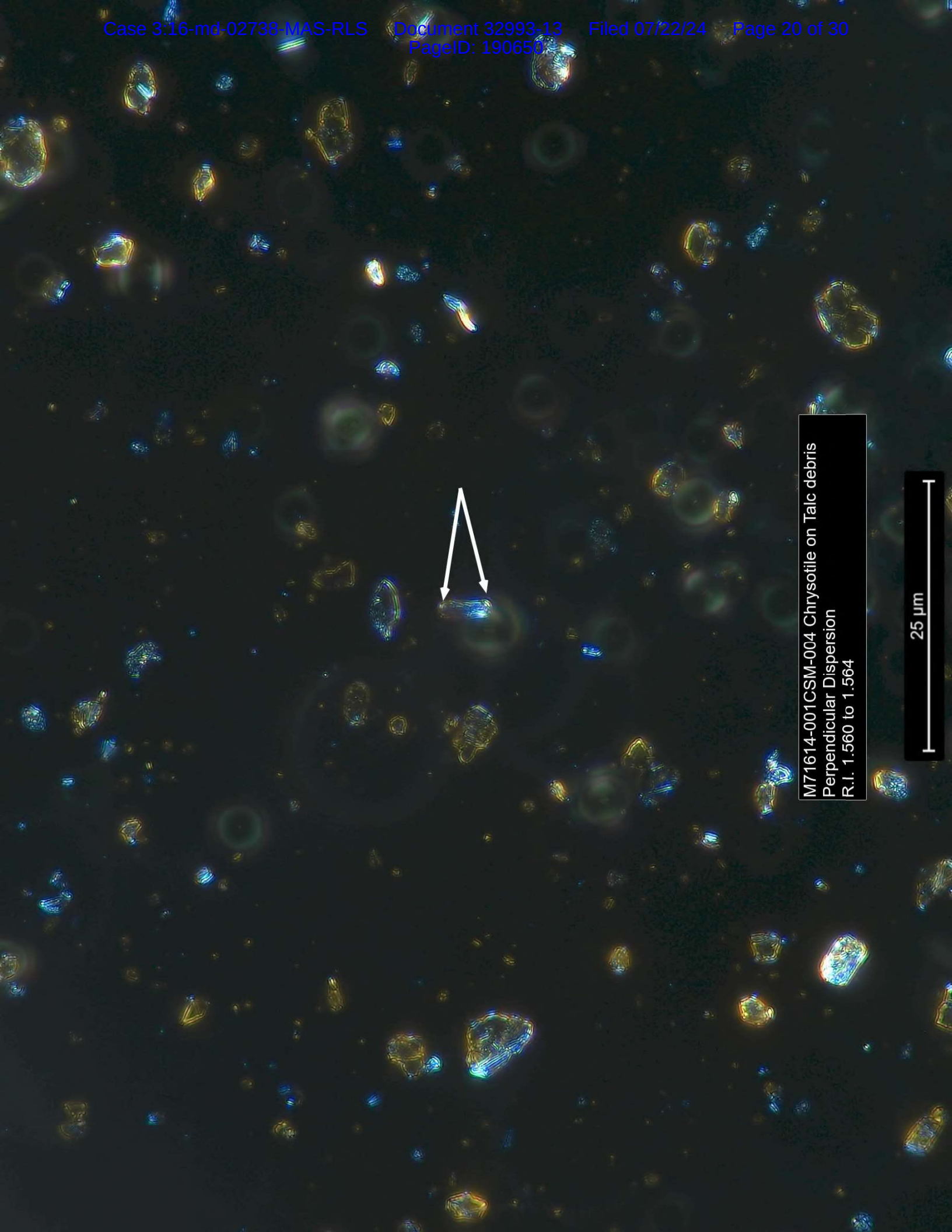
M71614-001CSM-003 Chrysotile  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu\text{m}$



M71614-001CSM-004 Chrysotile on Talc debris  
Parallel Dispersion 1.560 R.I. @ 630X  
R.I. 1.565 to 1.568

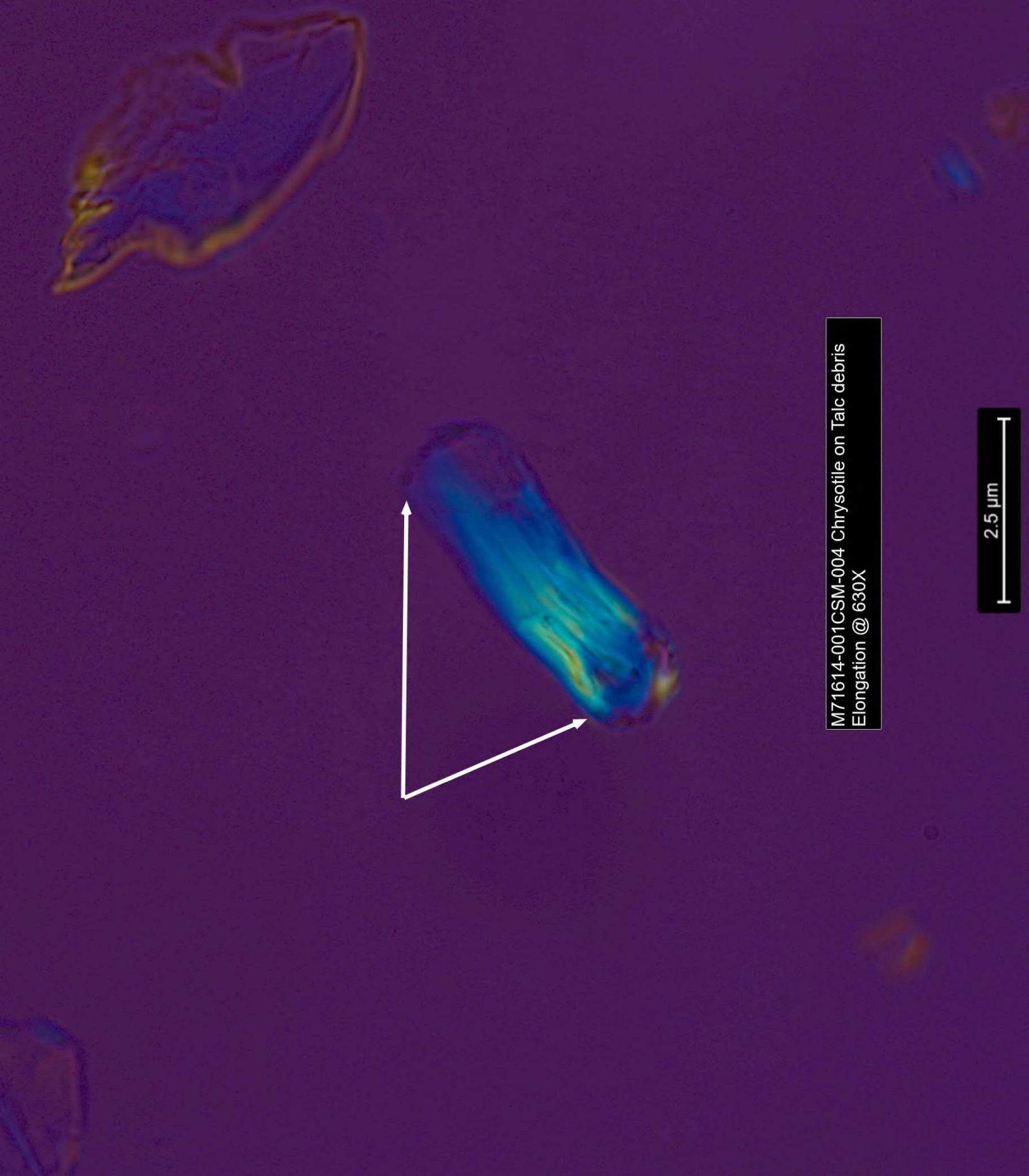
25  $\mu$ m



M71614-001CSM-004 Chrysotile on Talc debris  
Perpendicular Dispersion  
R.I. 1.560 to 1.564

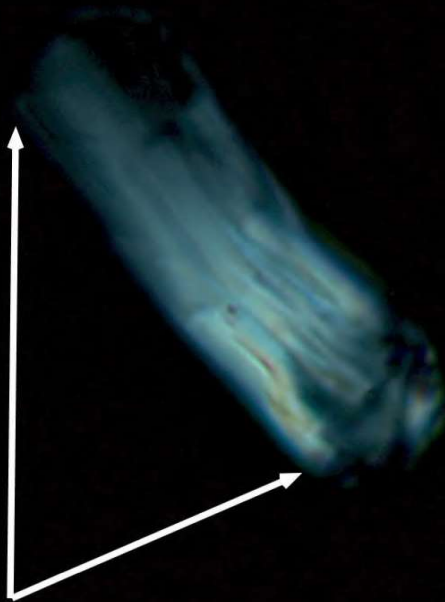
25  $\mu$ m





M71614-001CSM-004 Chrysotile on Talc debris  
Elongation @ 630X

2.5  $\mu$ m



M71614-001CSM-004 Chrysotile on Talc debris  
Crossed Polars @ 630X

2.5  $\mu\text{m}$





M71614-001CSM-004 Chrysotile on Talc debris  
Polarizer out  
Aperture Diaphragm 95% closed  
1.560 R.I. @ 630X

2.5  $\mu$ m

**MATERIALS ANALYTICAL SERVICES, LLC**  
**PLM ANALYSIS**

<b>Proj#-Spl#</b>	M71614-001ISONY	<b>Analyst</b>	Paul Hess	<b>Date</b>	2/28/2023
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<b>ClientName</b>	Kazan, McClain, Satterley & Greenwood	<b>ClientSpl 1</b>
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<b>Location</b>	Johnson's Baby Power Bottle, 1.5 oz.
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Type\_Mat

<b>Gross</b>	debris on filter	<b>% of Sample</b>	100
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Visual		Temp ( $\pm 1^\circ\text{C}$ )	21
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## OPTICAL DATA FOR ASBESTOS IDENTIFICATION

<b>Morphology</b>			
<b>Pleochroism</b>			
<b>Refract Index</b>			
<b><math>\alpha / \gamma</math> (nm)</b>			
<b>Sign^</b>			
<b>Extinction</b>			
<b>Birefringence</b>			
<b>Melt</b>			
<b>Fiber Name</b>			

## ASBESTOS MINERALS

## EST. VOL. %

NO ASBESTOS OBSERVED

Chrysotile.....

Amosite.....

Crocidolite.....

Tremolite/Actinolite.....

Anthrophyllite.....

## OTHER FIBROUS COMPONENTS

Talc-fibrous \*\*\*

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## NON FIBROUS COMPONENTS

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Talc	X
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Particulate	X
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Comments	X = Materials detected. Analyzed for regulated Amphiboles. No regulated Amphiboles observed. ***Trace fibrous Talc observed.
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# TEM Analysis

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	A1-A3							
NSD	A4							
NSD	A5							
NSD	A6							
NSD	A7							
NSD	A8							
NSD	A9							
NSD	B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	B9							
NSD	B10							
NSD	C1							
NSD	C2							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	C10							
NSD	F1							
NSD	F2							
NSD	F3							
NSD	F4							
NSD	F5							
NSD	F6							
NSD	F7							
NSD	F8							
NSD	F9							
NSD	F10							
NSD	G1							
NSD	G2							
NSD	G3							
NSD	G4							
NSD	G5							
NSD	G6							
NSD	G7							
NSD	G8							
NSD	G9							
NSD	G10							
NSD	I3							
NSD	I4							
NSD	I5							



TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
NSD	A2-A1							
NSD	A2							
NSD	A3							
NSD	A4							
NSD	A5							
NSD	A6							
NSD	A7							
NSD	A8							
NSD	A9							
NSD	A10							
NSD	B1							
NSD	B2							
NSD	B3							
NSD	B4							
NSD	B5							
NSD	B6							
NSD	B7							
NSD	B8							
NSD	C1							
NSD	C3							
NSD	C4							
NSD	C5							
NSD	C6							
NSD	C7							
NSD	C8							
NSD	C9							
NSD	D1							
NSD	D2							
NSD	D4							
NSD	D5							
NSD	D6							
NSD	D7							
NSD	D8							
NSD	D9							
NSD	F2							
NSD	F3							
NSD	F4							
NSD	F6							
NSD	F7							
NSD	F10							
NSD	H1							
NSD	H2							
NSD	H3							
NSD	H4							
NSD	H5							
NSD	I1							
NSD	I2							
NSD	I3							
NSD	I4							
NSD	I7							

TEM Bulk Talc Structure Count Sheet						
Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G. O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm²			1.166

Str. #	Grid Opening	Structure	Asbestos Type	Length	Width	Ratio	SAED	EDS
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Org. Sample Wt.	Sample Wt. Post HL Separation
0.02122	0.02122 g
Percent of Orig. Post Separation	100 (%)
Wt. Of Sample Analyzed	0.00001908 g
Filter size	1297 mm <sup>2</sup>
Number of Structures Counted	0 Str.
Structures per Gram of Sample	<52,000 Str./g

Detection Limit	5.24E+04	Str./g
Analytical Sensitivity	5.24E+04	Str./g



Case 3:16-md-02738-MAS-RLS Document 32993-13 Filed 07/22/24 Page 29 of 30

TEM Bulk Talc Structure Count Sheet  
PageID: 199659

Project/ Sample No.	M71614-001		Grid Box #	8865	No. of Grids Counted	2
Analyst:	Jayme Callan			Length	Width	G.O. Area
Date of Analysis	2/28/2023		G. O. in microns =	108	108	11664
Initial Weight(g)	0.02122			108	108	11664
Analysis Type	Post Separation Talc Analysis		Grid Acceptance	Yes	Average	11664
Scope No.	Accelerating Voltage	100 KV	Loading%	30%	G.O.s Counted	100
3	Screen Magnification	20 KX	Area Examined mm <sup>2</sup>			1.166

Str. #	Grid Opening	Str./Asb. Type	Length	Width	Ratio	SAED	EDS
NSD	A1-A3					No fibrous talc observed	

# Section 4